

## What is claimed is:

1           1.   Apparatus for a communication station operable in a  
2   wireless communication system to receive at least first burst data  
3   signals transmitted thereto upon at least a first channel by a  
4   first sending station, said apparatus comprising:

5           at least a first demodulator selectably coupled to receive  
6   indications of bursts of the first burst data signal, said first  
7   demodulator for performing demodulation operations upon the  
8   indications received thereat; and

9           a controller coupled to said first demodulator, said  
10   controller for controlling performance of the first demodulator to  
11   cause cyclo-stationary filtering of successive bursts of the first  
12   burst data signal during demodulation of the first burst data  
13   signal by said first demodulator.

1           2.   The apparatus of Claim 1 wherein the wireless  
2   communication system comprises a fixed wireless access system,  
3   wherein said communication station comprises a base transceiver  
4   station, and wherein said first demodulator is embodied at the base  
5   transceiver station.

1           3.    The apparatus of Claim 2 wherein said first demodulator  
2 comprises the first demodulator and at least a second demodulator.

1           4.    The apparatus of Claim 1 wherein the first channel upon  
2 which the first burst data signal is transmitted is characterized  
3 by at least a first channel-related parameter and wherein the  
4 cyclo-stationary filtering caused by said controller to be  
5 performed is performed upon the first channel-related parameter.

1           5.    The apparatus of Claim 4 wherein the first channel-  
2 related parameter upon which the cyclo-stationary filtering is  
3 caused to be performed by said controller comprises a fading-  
4 related parameter.

1           6.    The apparatus of Claim 5 wherein the first demodulator  
2 comprises a first equalizer as a portion thereof and wherein the  
3 fading-related parameter upon which the cyclo-stationary filtering  
4 is caused to be performed by said controller comprises a first-  
5 equalizer weighting value.

1           7.    The apparatus of Claim 6 wherein said controller further  
2 comprises a memory for storing and maintaining values of the first  
3 channel-related parameter.

1           8.    The apparatus of claim 1 wherein the first burst data  
2 signal is characterized by at least a first signal-related  
3 parameter and wherein the cyclo-stationary filtering caused by said  
4 controller to be performed is performed upon the first signal-  
5 related parameter.

1           9.    The apparatus of claim 8 wherein the first burst data  
2 signal exhibits FEC (forward error correction) and wherein the  
3 first signal-related parameter upon which the cyclo-stationary  
4 filtering is caused to be performed by said controller comprises an  
5 FEC-related value.

1           10.   The apparatus of claim 8 wherein the first burst data  
2 signal exhibits modulation orthogonalization and wherein the first  
3 signal-related parameter upon which the cyclo-stationary filtering  
4 is caused by said controller to be performed comprises a  
5 modulation-orthogonalization value.

1           11. The apparatus of claim 8 wherein the communication  
2 station includes an antenna assembly formed by a first antenna  
3 transducer and at least a second antenna transducer to provide  
4 antenna diversity and wherein the first signal-related parameter  
5 upon which the cyclo-stationary filtering is caused by said  
6 controller to be performed comprises antenna-combining parameters  
7 of the antenna assembly.

1           12. The apparatus of claim 8 wherein the first burst data  
2 signal exhibits time-adjustments and wherein the first signal-  
3 related parameter upon which the cyclo-stationary filtering is  
4 caused by said controller to be performed comprises a time-  
5 adjustment parameter.  
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1           13. For use in a fixed wireless network an apparatus  
2 comprising:

3           a plurality of subscriber stations; and

4           a communication station for transmitting and receiving signals  
5 to and from said subscriber stations wherein said communication  
6 station further comprises:

7           at least one demodulator coupled to the communication  
8 station for demodulating a plurality of data signals from a  
9 plurality of subscriber stations and received by said communication  
10 station; and

11           a controller for processing incoming data signals and  
12 maintaining data signal profiles wherein said controller is coupled  
13 to said demodulator for controlling said at least one.

14           14. The apparatus of Claim 13 wherein the wireless  
15 communication system comprises a fixed wireless access system,  
16 wherein said communication station comprises a base transceiver  
17 station.

1           15. The apparatus of Claim 14 wherein the at least one  
2 demodulator comprises at least two demodulators, each demodulator  
3 embodied in a separate modem at the base transceiver station.

1           16. The apparatus of Claim 15 wherein said base transceiver  
2 station is capable of operating two subscriber air interfaces on a  
3 burst-by-burst basis wherein each said burst comprises different  
4 data signal profiles and channel profiles.

1           17. The apparatus of Claim 16 wherein said first and second  
2 demodulator of said at least two demodulators alternately receive  
3 incoming data signals communicated by alternating ones of said  
4 subscriber stations.

1           18. The apparatus of Claim 13 wherein the data signals  
2 transmitted to the communication station by said plurality of  
3 subscriber stations are transmitted in bursts of selected time  
4 durations and wherein said controller further determines times of  
5 arrival and directions of the bursts which form the data signals.

1           19. The apparatus of Claim 13 wherein said controller further  
2 comprises a memory for storing and maintaining said data signal  
3 profiles and said channel profiles associated with each of the  
4 received said data signals.

1           20. A method for acting upon at least first burst data  
2 signals transmitted to a communication operable in a wireless  
3 communication system, the first burst data signals transmitted to  
4 the communication station upon a first channel by a first sending  
5 station, said method comprising:

6           selectably coupling at least a first demodulator to receive  
7 indications of burst of the first burst data signal;

8           controlling performance of the first demodulator to cause  
9 cyclo-stationary filtering of successive burst of the first burst  
10 data signal during demodulation of the indications of the first  
11 burst data signal.